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Wall insulation for vehicles

The invention relates to wall insulation for vehicles, in particular for rail vehicles, having an outer wall on which the material provided for insulation is arranged, and having an internal trim which covers the insulation towards the interior, with the insulation being formed by foam mouldings which are connected to the outer wall with a force fit and/or in an interlocking manner.

**Description**

The invention relates to wall insulation for vehicles, in particular for rail vehicles, having an outer wall  
5 on which the material which is provided for insulation is arranged, and having an internal trim which covers the insulation towards the interior.

For noise insulation, but in particular for heat  
10 insulation, it is known for the outer walls, and also if required the inner walls, of vehicles, for example rail vehicles, to be provided with insulation, which is arranged in cavities which are formed between an outer wall and an internal trim and is fixed there against  
15 displacement as a result of the vehicle movements.

In the case of known wall insulation for vehicle walls, a supporting structure is first of all applied to an inside of a wall, for example in the form of an  
20 adhesive layer, to which the generally normal insulating mats composed of fibre material, for example rock wool, are connected. Before the opposite wall is fitted, for example the internal trim, the insulation formed in this way is provided with an elastic cover,  
25 for example a film. In this case, a spray cork coating is used to control the air humidity in the vehicle, and is applied on the inside, facing the insulation, of the inner wall.

30 The handling and production of the known insulation are comparatively laborious and, because of the individual manufacturing steps, involve a time penalty which has a disadvantageous effect on the overall time required to manufacture a vehicle such as this.

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Against the background of this prior art, the object of the invention is therefore to provide insulation of the type mentioned initially whose installation in vehicles

and whose attachment are simplified, and which can be matched to different geometries without any problems.

This object is achieved by the features of the characterizing part of Claim 1. The invention accordingly provides for the insulation to be formed from foam mouldings which are connected to the outer wall with a force fit and/or in an interlocking manner.

10 The foam mouldings which are provided according to the invention may, for example, be supplied as goods sold by the metre, as mass-produced products, to the vehicle manufacturer, and can be cut to size and matched to the respective installation location, on site. In this

15 case, the processing tasks which until now have been necessary on the vehicle-side walls for the attachment of the insulation can be avoided to the extent, for example, that there is neither any need to apply an adhesive layer nor is there any need to wait for curing

20 times, for the drying of the adhesive layer.

Furthermore, no additional attachment means are required which would otherwise have to be kept in stock and would have to be fitted previously for

25 installation. A further advantage of the insulation provided according to the invention is that no dusts, gases or vapours, for example solvent vapours from adhesive layers, which are hazardous to health occur during its installation. The previous need to fit a

30 breathable cork layer is likewise obviated.

Furthermore, the insulation provided according to the invention, including the refinements and improvements described in the following text, result in particularly

35 effective insulation in that cold bridges, webs or rails, for example C rails, arranged on the outer wall, are completely sheathed by the insulation. In addition, any dimensional discrepancies resulting from tolerances

are also irrelevant since the individual insulation mouldings abut against one another and, by virtue of the material, are elastically flexibly matched to the respective geometric relationships without any adverse effect on the insulating effect. One advantageous refinement of the invention is characterized in that an open-pore foam is provided as the material for production of the foam mouldings which are used as insulation. This foam can preferably be formed with fine pores.

In this case, it has been found to be particularly advantageous that the material for the foam mouldings which are used as insulation is breathable, absorbs any moisture from the area and emits it again with a time delay.

It is also advantageous that the foam bodies which are provided for insulation can be removed again at any time, without leaving any residue, and within a very short time.

One preferred embodiment of the invention provides that the foam mouldings which are used as insulation have local recesses which interact with corresponding fixed-position holding means.

Corresponding to one development of the invention, the local recesses may in this case be in the form of dovetails in the surface of the foam mouldings or may have a different cross-sectional shape, matched to the respective contour of the holding means that are provided.

According to one configuration of the invention, the holding means which are provided for holding the foam mouldings which are used as insulation may be formed by local formed attachments arranged on the outer wall,

which may be in the form of hooks, angles or webs, or rails, for example C-shaped rails.

One preferred embodiment of a holder according to the invention for the foam mouldings is characterized in that the formed attachments which are used for holding the foam mouldings are in the form of T-shaped profile parts which are each connected by their web to the outer wall. In this case, the profile parts may be individual sections of short length or may be in the form of continuous profiles which engage with a force fit and/or in an interlocking manner in the indentations, which are provided for this purpose, in the respective foam bodies, over the entire length of the profiles.

A further refinement of the invention provides that the foam mouldings which are used as insulation are designed to be flame-resistant, in order to comply with the fire protection regulations.

These and further advantageous refinements and improvements of the invention are the subject matter of the dependent claims.

The invention, advantageous refinements of the invention as well as particular advantages of the invention will be explained and described in more detail with reference to one exemplary embodiment, which is illustrated in the schematic drawing.

The single figure shows a partial longitudinal section through a vehicle wall with wall insulation according to the invention.

The single figure shows, in the form of a longitudinal section, a section of a vehicle 10 with a wall 12, on which wall 12 wall insulation 14 is arranged, with

mouldings 15 which rest on one another in the direction in which the wall 12 extends. The wall 12 is provided with integrally formed projections 18 with a T-shaped cross section, which are surrounded by indentations 20 in the form of dovetails in the mouldings 16. These indentations 20 are pressed therein, depending on the material that is used for the mouldings 16, or are machined out with an appropriate cross section, for example by being cut out or milled.

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The mouldings 16 are composed of a fine-cell, open-pore foam which intrinsically has a behaviour which is preferably already flame-resistant.

15 The interlocking and/or force-fitting attachment of the insulating bodies 16 to the wall 12 allows quick assembly, without any need for additional facilities and tools.

## Patent Claims

1. Wall insulation for vehicles, in particular for rail vehicles, having an outer wall on which the material which is provided for insulation is arranged, and having an internal trim which covers the insulation towards the interior, characterized in that the insulation is formed by foam mouldings which are connected to the outer wall with a force fit and/or in an interlocking manner.
2. Wall insulation according to Claim 1, characterized in that an open-pore foam is provided as the material for production of the foam mouldings which are used as insulation.
3. Wall insulation according to Claim 1 or 2, characterized in that the material for the foam mouldings which are used as insulation is formed with fine pores.
4. Wall insulation according to Claim 1 or 2, characterized in that the material for the foam moulding which are used as insulation is breathable, absorbs any moisture from the area and emits it again with a time delay.
5. Wall insulation according to one of the preceding claims, characterized in that the foam mouldings which are used as insulation have local recesses which interact with corresponding fixed-position holding means.
6. Wall insulation according to one of the preceding claims, characterized in that the foam mouldings which are used as insulation have local recesses which are in the form of dovetails in the surface of the foam mouldings.

7. Wall insulation according to one of the preceding claims, characterized in that the holding means which are provided for holding the foam mouldings which are used as insulation are formed by local formed attachments arranged on the outer wall.
8. Wall insulation according to one of the preceding claims, characterized in that the formed attachments which are used for holding the foam mouldings are in the form of T-shaped profile parts which are each connected by their web to the outer wall.
9. Wall insulation according to Claim 8, characterized in that the T-shaped profile parts which are provided for holding are in the form of continuous profiles which engage with a force fit and/or in an interlocking manner in the indentations, which are provided for this purpose, in the respective foam bodies, over the entire length of the profiles.



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